REMARKS

This application has been reviewed in light of the Office Action dated July 11, 2003. Claims 1, 4, 5, 9-11, 14, 15, and 19-23 are pending in this application. Non-elected Claims 6-8 and 16-18 have been cancelled, without prejudice or disclaimer of subject matter. Claims 1, 11, 22, and 23, which are the independent claims, have been amended to define still more clearly what Applicants regard as their invention, in terms that distinguish over the art of record. Favorable reconsideration is requested.

The Office Action rejected Claims 1, 4, 5, 9, 21/1, and 22 under 35 U.S.C. § 103(a) as being obvious from U.S. Patent No. 5,660,739 (Ozaki et al.) in view of U.S. Patent No. 4,458,256 (Shirato et al.); rejected Claim 10 as being obvious from Ozaki et al. in view of Shirato et al. and further in view of U.S. Patent No. 4,429,321 (Matsumoto); rejected Claims 11, 14, 15, 21/11, and 23, as being obvious from Ozaki et al. in view of Shirato et al. and further in view of European Patent Application EP 0 764 531 A2 (Nakata et al.); rejected Claim 19 as being obvious from Ozaki et al. in view of Shirato et al. and Nakata et al., and further in view of U.S. Patent No. 5,658,471 (Murthy et al.); and rejected Claim 20 as being obvious from Ozaki et al. in view of Shirato et al. and Nakata et al., and further in view of Matsumoto. Applicants respectfully traverse these rejections.

Applicants submit that amended independent Claims 1, 11, 22, and 23, together with the remaining claims dependent thereon, are patentably distinct from the proposed combination of the cited prior art at least for the following reasons.

The aspect of the present invention set forth in Claim 1 is a liquid discharge head comprising a heat generating element contacted with and between a pair of electrodes for generating thermal energy which is used for discharging liquid from a discharge port, and a protective film provided on the heat generating element to protect the heat generating element. The protective film has a first region provided between the pair of electrodes, the

first region having a substantially uniform thickness along a direction connecting the pair of electrodes, and has a second region provided between the pair of electrodes, the second region having a substantially uniform thickness along the direction.

The second region is thinner than the first region stepwise and is disposed asymmetrically inside of the discharge port between the pair of electrodes along the direction. The volume of a liquid droplet discharged from the discharge port is changed by changing electric energy applied to the heat generating element, and the protective film is composed of plural protection layers, the first region having more layers than the second region.

One notable feature of Claim 1 is that the second region is disposed asymmetrically in a side of the discharge port between the pair of electrodes along the direction.

Ozaki et al. relates to a method of producing a substrate for an ink jet recording head and ink jet recording apparatus. In Ozaki et al., a region corresponding to a second region is provided at substantially a central position between the pair of electrodes. Applicants submit that nothing in Ozaki et al. would teach or suggest a second region that is disposed asymmetrically in a side of the discharge port between the pair of electrodes along the direction. Shirato also fails to show the feature.

Shirato et al. relates to an ink jet recording apparatus. The Office Action states that Shirato et al. teaches that "it is known in the ink jet art to vary the amount of energy applied to the heat generating element in order to vary the size of the ink droplet." Applicants submit that Shirato et al. would not teach or suggest a second region that is disposed asymmetrically in a side of the discharge port between the pair of electrodes along the direction.

Nakata et al. relates to a liquid ejection head, apparatus, and recovery

method for them. The Office Action states that Nakata et al. teaches "an ink jet print head comprising a moving member for the purpose of direction the propagation of the pressure wave toward the ejection outlet, thereby increasing ejection efficiency, ejection force, and ejection speed." Applicants submit that Nakata et al. would not teach or suggest a second region that is disposed asymmetrically in a side of the discharge port between the pair of electrodes along the direction.

Applicants submit that, at least for the reasons discussed above, the proposed combination of Ozaki et al. and Shirato et al., assuming such combination would even be permissible, would still fail to teach or suggest a second region that is disposed asymmetrically in a side of the discharge port between the pair of electrodes along the direction, as recited in Claim 1. Accordingly, Applicants submit that Claim 1 is patentable over Ozaki et al. and Shirato et al., taken separately or in any proper combination.

Independent Claim 22 is a method claim that corresponds to apparatus Claim 1, and is believed to be patentable for at least the same reasons as discussed above in connection with Claim 1. Additionally, independent Claims 11 and 23 include the same feature of a second region that is disposed asymmetrically in a side of the discharge port between the pair of electrodes along the direction, as discussed above in connection with Claim 1. Accordingly, Claims 11 and 23 are believed to be patentable over Ozaki et al., Shirato et al., and Nakata et al., taken separately or in any proper combination, for at least the same reasons as discussed above in connection with Claim 1.

A review of the other art of record, including Matsumoto and Murthy et al., has failed to reveal anything that, in Applicants' opinion, would remedy the deficiencies of the art discussed above, as applied against the independent claims herein. Therefore, those claims are respectfully submitted to be patentable over the art of record.

The other rejected claims in this application depend from Claim 1 or Claim 11 discussed above, and, therefore, are submitted to be patentable for at least the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, individual reconsideration of the patentability of each claim on its own merits is respectfully requested.

This Amendment After Final Action is believed to place this application in condition for allowance and, therefore, its entry is believed proper under 37 C.F.R. § 1.116. Accordingly, entry of this Amendment After Final Action, as an earnest effort to advance prosecution and reduce the number of issues, is respectfully requested. Should the Examiner believe that issues remain outstanding, it is respectfully requested that the Examiner contact Applicants' undersigned attorney in an effort to resolve such issues and advance the case to issue.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

Applicants' undersigned attorney may be reached in our New York Office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address listed below.

Respectfully submitted,

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